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EXAMINER

LEUNG, JENNIFER A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1764

DATE MAILED: 09/13/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/472,150

Applicant(s)

HASEGAWA ET AL.

Examiner

Jennifer A. Leung

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-14, 22-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 15-21 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1-14 and 22-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to non-elected inventions, there being no allowable generic or linking claim.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. Although the references have been considered, an English language translation is requested for the following documents:
 - “Measurement and control of flow rate of powder”, Chemical Engineering (July 1998), 62:379-380.
 - Kagakukogaku Kyokai, Kagakukougaku Binran (Rev. 5th Ed.) (1988), pp. 870-871.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:
 - FIGs. 1-4, 13-15: reference “211”

- FIG. 8: reference "125"
- FIG. 14: reference "212"

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "211" has been used to designate both an unspecified object labeled "C" (FIGs. 1-4 and 13-15) and "a circulation pump" (FIG.14).

7. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

8. The abstract of the disclosure is objected to because of improper because of undue length and the use of legal phraseology ("comprises" - line 1; "means" - lines 5, 12). Correction is required. See MPEP § 608.01(b). Applicant is reminded of the proper language and format for an abstract of the disclosure:

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

9. The disclosure is objected to because of the following informalities:

- On page 61, line 18, -- or object feeding -- should be inserted before “pipe”, as set forth in lines 13-14.

Appropriate correction is required.

10. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 15-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 15, “high” (lines 1, 2, 3, 5, 7, 10, 11) is a relative term and is therefore considered vague and indefinite. Likewise in subsequent claims 16-21.

With respect to claim 16, “pressure holding fluid” (lines 4 and 5-6) lacks proper positive antecedent basis. Furthermore, it is unclear as to what is intended by, “feeder of pressure holding fluid” (line 4).

With respect to claim 18, “can be” (line 3) is considered vague and indefinite. Furthermore, it is unclear as to the structural limitation the applicants are attempting to recite by, “fixed to be removable to the exterior vessel” (line 4-5).

With respect to claim 19, “at least one” (lines 3) and “at least one kind” (line 5) are considered vague and indefinite. Furthermore, it is unclear as to what is intended by, “kinds” (line 4) and “kind” (line 5).

With respect to claim 20, “at least one” (line 3) and “at least one kind” (lines 5-6) are considered vague and indefinite. Furthermore, it is unclear as to what is intended by, “kinds” (line 5) and “kind” (line 6).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 15-21 are rejected under 35 U.S.C. 102(b) as being anticipated by McBrayer, Jr. et al. (U.S. 5,552,039).

With respect to claim 15, McBrayer, Jr. et al. disclose a high-pressure treatment apparatus **10** comprising:

- A high-pressure reactor **12**;
- An exterior vessel **22** in which the high-pressure reactor **12** is installed;
- Means for feeding a treatment object **30** or **230** into the high-pressure reactor **12**;
- Means for feeding a reaction medium **241** into the high-pressure reactor **12** (column 13, lines 40-51); and

- Means for controlling pressure **38, 40, 42, 43, 44, 46, 48** (column 9, lines 25-29) within a gap **24** between the exterior vessel **22** and the high-pressure reactor **12** to be higher than that within the high-pressure reactor **12** (column 4, lines 48-50).

With respect to claim 16, McBrayer, Jr. et al. further disclose that the means for controlling pressure within a gap **24** comprises a feeder of pressure holding fluid into the gap **24** and a pressure controller **43** for controlling pressure of the pressure holding fluid (column 4, lines 48-67; column 9, lines 25-29; column 11, lines 14-34).

With respect to claim 17, McBrayer, Jr. et al. further disclose a means for controlling temperature **470, 570, 670** of the exterior vessel **22** to be lower than that of the high-pressure reactor **12** (column 14, line 24 to column 15, line 9).

With respect to claim 18, McBrayer, Jr. et al. further disclose that the exterior vessel **22** comprises a trunk portion **22** and a cover portion **28** that opens and shuts, and the high-pressure reactor **12** is fixed to be removable to the exterior vessel **22** (column 5, lines 14-16; column 9, lines 5-10).

With respect to claim 19, McBrayer, Jr. et al. further disclose that the high-pressure reactor **12** is formed, for example, of at least one of stainless steel or noble metal (ie. Ni, Zr, Ti, Au, Pt) (column 9, lines 52-63; column 10, lines 8-41). McBrayer, Jr. et al. also cite that the exact composition of the reaction chamber wall will depend on the corrosive conditions experience with a particular waste feed.

With respect to claim 20, McBrayer, Jr. et al. further disclose that an inner surface **14** of the high-pressure reactor **12** is lined, for example, with at least one of stainless steel or noble

metal (ie. Ni, Zr, Ti, Au, Pt) (column 9, lines 52-63; column 10, lines 8-41). McBrayer, Jr. et al. also cite that the exact composition of the reaction chamber lining will depend on the corrosive conditions experience with a particular waste feed.

With respect to claim 21, McBrayer, Jr. et al. further disclose that an inner surface **14** of the high-pressure reactor **12** is, for example, coated with ceramic material (column 10, lines 8-41). McBrayer, Jr. et al. also cite that the exact composition of the reaction chamber coating will depend on the corrosive conditions experience with a particular waste feed.

Instant claims 15-21 read structurally on the apparatus of McBrayer, Jr. et al.

13. Claims 15, 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Dassel et al. (U.S. 5,591,415)

With respect to claim 15, Dassel et al. disclose a high-pressure treatment apparatus **10** comprising:

- A high-pressure reactor **12**;
- An exterior vessel **22** in which the high-pressure reactor **12** is installed;
- Means **26** for feeding a treatment object into the high-pressure reactor **12**;
- Means **28** for feeding a reaction medium into the high-pressure reactor **12**; and
- Means for controlling pressure within a gap **24** between the exterior vessel **22** and the high-pressure reactor **12** to be higher than that within the high-pressure reactor **12** (column 11, lines 13-22).

With respect to claim 17, Dassel et al. further disclose a means for controlling temperature of the exterior vessel **22** to be lower than that of the high-pressure reactor **12** (column 15, line 63 to column 16, line 11).

With respect to claim 19, Dassel et al. further disclose that the high-pressure reactor **12** is formed, for example, of stainless steel (column 9, lines 41-50) or titanium (column 10, lines 18-24).

With respect to claim 20, Dassel et al. further disclose that an inner surface of the high-pressure reactor **12** comprises a liner containing a noble metal (ie. Ti or Pt) (column 9, line 66 - column 10, line 24).

Instant claims 15, 17, 19 and 20 read structurally on the apparatus of Dassel et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akira et al. (JP 09-085075) in view of McBrayer, Jr. et al. (U.S. 5,552,039).

With respect to claim 15, Akira et al. disclose a high-pressure treatment apparatus comprising:

- A high-pressure reactor **2**;
- An exterior vessel **1** in which the high-pressure reactor **2** is installed;
- Means **4** for feeding a treatment object into the high-pressure reactor **2**;
- Means **5** for feeding a reaction medium into the high-pressure reactor **2**; and
- Means for controlling pressure within a gap **B** between the exterior vessel **1** and the high-pressure reactor **2** to be substantially the same as the pressure within the reactor **2** (Sections [0015-0016]).

However, Akira et al. are silent as to the pressure within the gap being of a higher pressure than that within the high-pressure reactor.

McBrayer, Jr. et al. teach an apparatus comprising substantially the elements of Blaney and further teaches that the pressure within a gap **24** between the exterior vessel **22** and the high-pressure reactor **12** is maintained higher than that within the high-pressure reactor **12**, although an equal or lower pressure may also be used depending on the design stress of the reactor walls (column 4, lines 48-61).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a gap pressure greater than that within the high-pressure reactor in the

apparatus of Akira et al. because the higher pressure prevents the flow of often corrosive reactants, products of reaction, and effluent gas from entering the gap, such as in the case of a pinhole or leak in the reactor wall, as taught by McBrayer, Jr. et al (column 5, lines 53 - column 6, line 8).

With respect to claim 16, Akira et al. further disclose an apparatus wherein the means for controlling pressure within a gap **B** comprises a feeder **58** of pressure holding fluid **E** into the gap **B** and a pressure controller **56, 57** for controlling pressure of the pressure holding fluid (Sections [0015-0016]).

With respect to claim 17, Akira et al. are silent as to a means for controlling temperature of the exterior vessel **1** to be lower than that of the high-pressure reactor **2**.

McBrayer, Jr. et al. further teach the use of a means for controlling temperature **470, 570, 670** of the exterior vessel **22** to be lower than that of the high-pressure reactor **12** (column 14, lines 24-29; column 14, line 24 to column 15, line 9).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the means for controlling temperature to the modified apparatus of Akira et al. because by cooling the exterior vessel to as low a temperature as possible during operation, the thickness of the exterior vessel may be decreased and a lower-cost construction material may be used, as taught by McBrayer, Jr. et al.

With respect to claim 18, Akira et al. further disclose that the high-pressure reactor **2** may be fixed to be removable to the exterior vessel **1**, as in repair (Section [0010]). However, Akira et al. are silent as to specifically the exterior vessel **1** comprising a trunk portion and a cover portion that opens and shuts.

McBrayer, Jr. et al. further teach the exterior vessel **22** consists of a trunk portion **22** and a cover portion **28** that opens and shuts, in order to allow the high-pressure reactor **12** to be removable to the exterior vessel **22** (column 5, lines 14-16; column 9, lines 5-10).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a trunk portion and cover portion for the exterior vessel in the modified apparatus of Akira et al. because providing a cover portion which is detachable from the trunk portion allows for easy operator access to the interior high-pressure reactor, for example, during service or replacement, as taught by McBrayer, Jr. et al.

With respect to claim 19, Akira et al. further disclose an apparatus wherein the high-pressure reactor **2** is formed of, for example, stainless steel and metal alloys (ie. Ni alloy) (Section [0005]).

With respect to claim 20, Akira et al. further disclose that the reaction container should be corrosion resistant, or a corrosion resistance material may be coated on the reaction container internal surface (Section [0010]). However, Akira et al. are silent as to specifically a liner comprising stainless steel, Ni, Zr, Ti, Ta, Au, Pt, or alloys of two or more elements.

McBrayer, Jr. et al. teach the use of a liner on the inner surface **14** of the high-pressure reactor **12** comprising a corrosion resistant material such as stainless steel or a noble metal (ie. Ni, Zr, Ti, Au, Pt) (column 9, lines 52-63; column 10, lines 8-41).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a liner to the modified apparatus of Akira et al. because the use of a protective liner allows the reactor to withstand harsh reaction atmospheres and thus extends the useful life of the apparatus, as taught by McBrayer, Jr. et al.

With respect to claim 21, the same comments apply. However, Akira et al. are silent as to the inner surface of the high-pressure reactor comprising a ceramic material coating.

McBrayer, Jr. et al. teach the use of a ceramic coating on the inner surface 14 of the high-pressure reactor 12 (column 10, lines 8-41).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the ceramic material coating in the modified apparatus of Akira et al. because the use of the protective ceramic coating allows the reactor to withstand harsh reaction atmospheres and thus extends the useful life of the apparatus, as taught by McBrayer Jr., et al.

15. Claims 15-17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blaney (U.S. 5,932,182) in view of McBrayer, Jr. et al. (U.S. 5,552,039).

With respect to claim 15, Blaney discloses an apparatus **11** comprising:

- A high-pressure reactor **10**;
- An exterior vessel **12** in which the high-pressure reactor **10** is installed;
- Means **16** for feeding a treatment object (FIG.1, FEED) into the high-pressure reactor **10**;
- Means **18** for feeding a reaction medium **13** into the high-pressure reactor **10** (column 5, lines 39-51); and
- Means for controlling pressure within a gap (FIG. 1, void space within **12**) between the exterior vessel **12** and the high-pressure reactor **10** (claim 5; column 3, lines 53-58; column 4, lines 44-56).

However, Blaney is silent as to specifically maintaining the pressure within the gap to be higher than that within the high-pressure reactor **10**.

McBrayer, Jr. et al. teaches an apparatus comprising substantially the elements of Blaney and further teaches that the pressure within a gap **24** between the exterior vessel **22** and the high-pressure reactor **12** is maintained higher than that within the high-pressure reactor **12**, although an equal or lower pressure may also be used depending on the design stress of the reactor walls (column 4, lines 48-61).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a gap pressure greater than that within the high-pressure reactor in the apparatus of Blaney because the higher pressure prevents the flow of often corrosive reactants, products of reaction, and effluent gas from entering the gap, such as in the case of a pinhole or leak in the reactor wall, as taught by McBrayer, Jr. et al (column 5, lines 53 - column 6, line 8).

With respect to claim 16, Blaney further discloses a high-pressure treatment apparatus **11** wherein the means for controlling pressure within a gap comprises a feeder **34** of pressure holding fluid (in tank **38**; column 5, lines 21-26) into the gap and a pressure controller for controlling pressure of the pressure holding fluid (column 4, lines 44-56).

With respect to claim 17, Blaney further discloses a high-pressure treatment apparatus **11** comprising a means **36** for controlling temperature of the exterior vessel to be lower than that of the high-pressure reactor (column 3, lines 53-58; column 6, lines 9-17).

With respect to claim 19, Blaney further discloses a high-pressure treatment apparatus **11** wherein the high-pressure reactor **10** is formed of, for example, Ni alloy, Ti, and other corrosion resistant metals and alloys (column 4, lines 17-33).

With respect to claim 20, Blaney further discloses a high-pressure treatment apparatus **11** wherein an inner surface of the high-pressure reactor **10** is lined with, for example, titanium based alloy (column 4, lines 17-33).

With respect to claim 21, Blaney further discloses a high-pressure treatment apparatus **11** wherein an inner surface of the high-pressure reactor **10** is coated with, for example, high-temperature fired ceramics (column 4, lines 17-34).

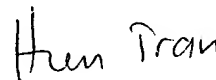
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian C. Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

JAL
September 11, 2002



HIEN TRAN
PRIMARY EXAMINER